

Solve each system using elimination:

1) $\begin{cases} 3x + 5y = 4 \\ 6x + 7y = 6 \end{cases}$ $\left(\frac{1}{2}, \frac{1}{2}\right)$

$$\begin{array}{r} -5(3x + 5y = 4) \\ 3(6x + 7y = 6) \end{array}$$

$$\begin{array}{r} -15x - 25y = -20 \\ 18x + 21y = 18 \end{array}$$

$$\begin{array}{r} 3x + 5\left(\frac{1}{2}\right) = 4 \\ 3x + \frac{5}{2} = 4 \end{array}$$

$$\begin{array}{r} 6x + 5 = 8 \\ 6x = 3 \\ x = \frac{1}{2} \end{array}$$

$$4y = -2$$

$$y = -\frac{1}{2}$$

2) $\begin{cases} 2x - 7y = -1 \\ 6x - 21y = -3 \end{cases}$

$$\begin{array}{r} -3(2x - 7y = -1) \\ 6x - 21y = -3 \end{array}$$

$$\begin{array}{r} -6x + 21y = 3 \\ 6x - 21y = -3 \end{array}$$

$$0 = 0$$

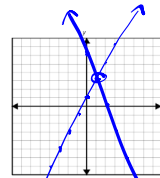
TRUE
consistent
dependent

Use the graphing method to solve.

1) $\begin{cases} 2x - y = -1 \\ 3x + y = 6 \end{cases}$ $(1, 3)$

$$y = 2x + 1$$

$$y = -3x + 6$$



Use the substitution method.

2) $\begin{cases} x + 2y = 7 \\ 2x - y = 4 \end{cases}$ $x = -2y + 7$ $(3, 2)$

$$\begin{array}{r} 2(-2y + 7) - y = 4 \\ -4y + 14 - y = 4 \\ -5y + 14 = 4 \\ -5y = -10 \\ y = 2 \end{array}$$

$$x = -2(2) + 7$$

$$x = 3$$

Use the elimination method to solve the system. Show all work.

3) $\begin{cases} 4a - 5b = 10 \\ 2a - 5b = 0 \end{cases}$ $(5, 2)$

$$\begin{array}{r} 4a - 5b = 10 \\ -2a + 5b = 0 \end{array}$$

$$\begin{array}{r} 2a - 5b = 0 \\ -2a = -10 \\ a = 5 \end{array}$$

$$2(5) - 5b = 0$$

$$10 - 5b = 0$$

$$-5b = -10$$

$$b = 2$$

4) $\begin{cases} 2b = 2a + b - 4 \\ 3a = 3b - a + 2 \end{cases}$ $(5, 6)$

$$\begin{array}{r} 2b = 2a + b - 4 \\ 3a = 3b - a + 2 \end{array}$$

$$\begin{array}{r} 2(-2a + b) = -4 \\ -4a + 2b = -8 \\ 4a - 3b = 2 \end{array}$$

$$\begin{array}{r} 4a - 3b = 2 \\ -4a + 2b = -8 \end{array}$$

$$\begin{array}{r} -b = -6 \\ b = 6 \end{array}$$

$$2(6) = 2a + 6 - 4$$

$$12 = 2a + 2$$

$$10 = 2a$$

$$5 = a$$

$(-18, 14)$

5) $\begin{cases} 2m + 3n = 6 \\ m + 2n = 10 \end{cases}$

$$\begin{array}{r} -2(2m + 3n = 6) \\ 2m + 3n = 6 \end{array}$$

$$\begin{array}{r} -4m - 6n = -12 \\ 2m + 3n = 6 \end{array}$$

$$\begin{array}{r} -2m - 9n = -18 \\ -n = -14 \\ n = 14 \end{array}$$

$$m + 2(14) = 10$$

$$m + 28 = 10$$

$$m = -18$$

6) $\begin{cases} 2x - y = 8 \\ x - 8y = 4 \end{cases}$

$$\begin{array}{r} -2(2x - y = 8) \\ 2x - y = 8 \end{array}$$

$$\begin{array}{r} -4x + 2y = -16 \\ 2x - y = 8 \end{array}$$

$$\begin{array}{r} -2x + 3y = -8 \\ -x - y = 8 \end{array}$$

$$\begin{array}{r} -x - y = 8 \\ -x - y = 8 \end{array}$$

$$0 = 0$$

7) $\begin{cases} 3x + y = 6 \\ 2x - y = -1 \end{cases}$ $(1, 3)$

$$\begin{array}{r} 3x + y = 6 \\ 2x - y = -1 \end{array}$$

$$\begin{array}{r} 5x = 5 \\ x = 1 \end{array}$$

$$2(1) - y = -1$$

$$2 - y = -1$$

$$-y = -3$$

$$y = 3$$

8) $\begin{cases} 5p - 12q = 43 \\ 3p - 4q = 3 \end{cases}$

$$\begin{array}{r} 3(5p - 12q = 43) \\ -5(3p - 4q = 3) \end{array}$$

$$\begin{array}{r} 15p - 36q = 129 \\ -15p + 20q = -15 \end{array}$$

$$\begin{array}{r} -16q = 114 \\ q = -\frac{57}{8} \end{array}$$

$$3p + 2\left(-\frac{57}{8}\right) = 3$$

$$3p - \frac{57}{4} = 3$$

$$3p = 3 + \frac{57}{4}$$

$$3p = \frac{12}{4} + \frac{57}{4}$$

$$3p = \frac{69}{4}$$

$$p = \frac{23}{4}$$

9) $\begin{cases} 3x + y = -5 \\ 2x - y = 3 \end{cases}$ $(-2, 1)$

$$\begin{array}{r} 3x + y = -5 \\ 2x - y = 3 \end{array}$$

$$\begin{array}{r} 5x = -2 \\ x = -\frac{2}{5} \end{array}$$

$$2\left(-\frac{2}{5}\right) - y = 3$$

$$-\frac{4}{5} - y = 3$$

$$-y = 3 + \frac{4}{5}$$

$$-y = \frac{19}{5}$$

$$y = -\frac{19}{5}$$

10) $\begin{cases} 2x - y = 2 \\ x = \frac{2}{3}y \end{cases}$

$$2\left(\frac{2}{3}y\right) - y = 2$$

$$\frac{4}{3}y - y = 2$$

$$\frac{1}{3}y = 2$$

$$y = 6$$

$$x = \frac{2}{3}(6)$$

$$x = 4$$

Choose your method to solve.

11) $\begin{cases} 3x + y = -5 \\ 2x - y = 3 \end{cases}$ $(-2, 1)$

$$\begin{array}{r} 3x + y = -5 \\ 2x - y = 3 \end{array}$$

$$\begin{array}{r} 5x = -2 \\ x = -\frac{2}{5} \end{array}$$

$$2\left(-\frac{2}{5}\right) - y = 3$$

$$-\frac{4}{5} - y = 3$$

$$-y = 3 + \frac{4}{5}$$

$$-y = \frac{19}{5}$$

$$y = -\frac{19}{5}$$

12) $\begin{cases} 2x - y = 2 \\ x = \frac{2}{3}y \end{cases}$

$$2\left(\frac{2}{3}y\right) - y = 2$$

$$\frac{4}{3}y - y = 2$$

$$\frac{1}{3}y = 2$$

$$y = 6$$

$$x = \frac{2}{3}(6)$$

$$x = 4$$

$\begin{cases} -3x + 4y = -8 \\ 3x - 7y = -8 \end{cases}$

$$\begin{array}{r} -3x + 4y = -8 \\ 3x - 7y = -8 \end{array}$$

$$\begin{array}{r} 0 = -16 \end{array}$$

Inconsistent

$\begin{cases} -4x + 3y = 5 \\ -4x + 3y = 5 \end{cases}$

$$\begin{array}{r} -4x + 3y = 5 \\ -4x + 3y = 5 \end{array}$$

$$0 = 0$$

Consistent
Dependent.

$$x + y = 180$$

$$x = 2y$$

Quiz Tomorrow